REMARKS

In the Office Action, claims 1-26 were rejected. No claims are presently added, amended, or canceled. Accordingly, claims 1-26 are pending in the present application. In view of the following remarks, the Applicant respectfully requests reconsideration and allowance of all pending claims.

Rejections Under 35 U.S.C. §103

The Examiner rejected claims 1, 6, 21, and 24 under 35 U.S.C. §103(a) as being unpatentable over Fritz et al. (U.S. Publication No. 2003/0199762, hereinafter "the Fritz reference") in view of Tannenbaum et al. (U.S. Patent No. 6,535,623, hereinafter "the Tannenbaum reference") and Wilensky et al. (U.S. Patent No. 7,171,057, hereinafter "the Wilensky reference"); rejected claims 2 and 5 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, and Wilensky references, as applied to claim 1 above, and further in view of Yu et al. (U.S. Patent No. 6,563,513, hereinafter "the Yu reference"); rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, Wilensky, and Yu references, as applied to claim 2 above, and further in view of Nishikawa et al. (U.S. Patent No. 5,673,332, hereinafter "the Nishikawa reference"); rejected claim 4 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, Wilensky, Yu, and Nishikawa references as applied to claim 3 above, and further in view of Avinash et al. (U.S. Publication No. 2003/0099405, hereinafter "the Avinash reference"); rejected claim 7 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, and Wilensky references as applied to claim 1 above, and further in view of the Avinash reference; rejected claims 8, 22, and 25 under 35 U.S.C. §103(a) as being unpatentable over the Fritz reference in view of the Tannenbaum, Wilensky, and Yu, Nishikawa, and Avinash references; rejected claim 9 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, Yu, Wilensky, Nishikawa, and Avinash references as applied to claim 8 above, and further in view of Nakabayashi et al. (U.S. Patent No. 7,113,306, hereinafter "the Nakabayashi reference"); rejected claims 11, 16, 18-20, 23, and 26 under 35 U.S.C. §103(a) as being unpatentable over the

Tannenbaum reference in view of Hsieh (U.S. Patent No. 6,009,140, hereinafter "the Hsieh reference") and the Wilensky reference; rejected claims 12 and 15 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, Hsieh, and Wilensky references as applied to claim 11 above, and further in view of the Yu reference; rejected claim 13 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, Hsieh, Wilensky, and Yu references as applied to claim 12 above, and further in view of the Nishikawa reference; rejected claim 14 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, Hsieh, Wilensky, Yu, and Nishikawa references as applied to claim 13 above, and further in view of the Avinash reference; and rejected claim 17 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, Hsieh, and Wilensky references, as applied to claim 11 above, and further in view of the Avinash reference. The Applicant respectfully traverses these rejections.

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974). However, it is not enough to show that all the elements exist in the prior art since a claimed invention composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). It is important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* Specifically, there must be some articulated reasoning with a rational underpinning to support a conclusion of obviousness; a conclusory statement will not suffice. *In re Kahn,* 441 F.3d 977, 988 (Fed. Cir. 2006). Indeed, the factual inquiry determining whether to combine references must be thorough and searching, and it must be based on *objective evidence of record. In*

re Lee, 61 U.S.P.Q.2d 1430, 1436 (Fed. Cir. 2002). Moreover, if the proposed modification or combination or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959); *see* M.P.E.P. §2143.01(IV).

Moreover, the Applicant submits that, during patent examination, the pending claims must be given an interpretation that is *reasonable* and *consistent* with the specification. *See In re Prater*, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969); *In re Morris*, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); *see also* M.P.E.P. §2111 (describing the standards for claim interpretation during prosecution). Indeed, the *specification* is "the primary basis for construing the claims." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (citations omitted). One should rely *heavily* on the written description for guidance as to the meaning of the claims. *See id.* Although limitations from the specification are not read into the claims, claims should be given their broadest reasonable construction in light of the specification as it would be interpreted by one of ordinary skill in the art. *See In re Van Geuns*, 26 U.S.P.Q.2d 1057, 1059 (Fed. Cir. 1993); *In re Am. Acad. of Sci. Tech. Ctr.*, 70 U.S.P.Q.2d 1827 (Fed. Cir. 2004); M.P.E.P. § 2111. Indeed, "reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from 'reading limitations of the specification into the claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no expressed basis in the claim." *In re Prater*, 162 U.S.P.Q. 541, 550-551 (C.C.P.A. 1969).

Independent Claims 1, 21, and 24

Independent claims 1, 21, and 24 recite, *inter alia*, "performing spike noise dependent blending of data derived from the input image data with the processed image data based upon [a] characterization." Applicant respectfully reiterates that the Fritz,

Tannenbaum, and Wilensky references collectively fail to disclose each element of independent claims 1, 21, and 24.

Omitted Features: the Wilensky reference

In the Office Action, the Examiner cited the Wilensky reference for disclosing spike noise dependent blending. Office Action, pp. 13-14. Specifically, the Examiner equated the removal of noise from a blended image with the spike noise recited in the present claims. *Id.*; *see* Wilensky, col. 4, lines 35-37. Additionally, the Examiner equated the blending of image components from separate image regions with the blending of input image data with processed image data recited in the present claims. *Id.*; *see* Wilensky, col. 4, lines 63-66.

First, Applicant reasserts that the Wilensky reference fails to teach or suggest performing spike noise dependent blending, as recited by independent claims 1, 21, and 24. As previously stated by Applicant, the Wilensky reference appears to disclose techniques for improving non-local noise characteristics. Wilensky, col. 6, lines 38-40 and 56. The Wilensky reference specifically defines noise as "a non-local property of an image." Wilensky, col. 6, line 56. In contrast, the claims of the present Application are directed to "spike noise" dependent blending, which is local in nature.

In response to these arguments, the Examiner stated the following:

> In response to the applicant's arguments that the specification clearly differentiates spike noise from non-local noise, the examiner would like to point out that the claim language is given its broadest reasonable interpretation. The specification in not measure of invention. Therefore, limitations contains therein can not be read into the claims for purpose of avoiding the prior art. In re Sprock, 55CCPA 743, 386 F. 2d 924, 155 USPQ 687 (1968). For instant case, the spike noise being different from non-local noise was not claim. Thus any method of

> blending parameters whether it's not local noise or local spike noise could be read the broad claim.
>
> Office Action, p.3.

Applicant respectfully asserts that the phrase "spike noise dependent blending" is a limitation explicitly recited in claims 1, 21, and 24 that requires the blending to depend on the spike noise. It appears that the Examiner is not giving any patentable weight to this recitation. Although the claims must be interpreted as broadly as their terms reasonably allow, the words of the claim must be given their plain meaning unless the plain meaning is inconsistent with the specification. *See In re Am. Acad. of Sci. Tech. Ctr.*, 70 U.S.P.Q.2d 1827, 1834 (Fed. Cir. 2004); *In re Zletz*, 13 U.S.P.Q.2d 1320, 1322 (Fed. Cir. 1989). Further, the broadest reasonable interpretation of the claims must be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999). In giving the claims their broadest reasonable interpretation, the Examiner seems to be equating spike noise with patterned noise that is non-local in nature. However, the plain meaning of the word "spike" connotes a property that is local in nature. For example, the term "spike" is defined as "a pointed element in a graph or tracing," "an unusually high and sharply defined maximum," "a momentary sharp increase and fall in electric potential," and "an abrupt sharp increase." *Merriam Webster's Collegiate Dictionary* 1201 (11th ed. 2005). These definitions all define the term "spike" as a sharp increase, maximum, or point. Indeed, the plain definition of the term spike appears to directly conflict with interpreting a spike as anything other than a local phenomenon.

Further, Applicant stresses that although limitations from the specification are not read into the claims, claims must be given an interpretation that is reasonable and consistent with the specification. *See in re* Prater, 415 f.2d 1393, 1404-05, 162, U.S.P.Q. 541, 550-51 (C.C.P.A. 1969) (emphasis added). The specification clearly differentiates spike noise from non-local noise. For example, the specification states, "typical image

noise may be a mixture of random point noise, which may also be referred to as spike noise, and patterned noise." Specification, p. 2, lines 9-11. The specification also explains that spike noise is point noise, stating in the background section that "imaging methods requiring reconstruction . . . convert point or spike noise into splotches or small streaks and thereafter the point noise is usually hidden in the patterned noise." Specification, p. 2, lines 13-15. Indeed, the specification is directed to reducing spike noise in addition to patterned noise. For example, the specification explains, "Methods designed to mitigate patterned noise do not adequately mitigate point noise, however, without blurring or decreasing the contrast of the useful information in the processed image. There is a need therefore, for an improved technique for reducing both random noise points (spike noise) and patterned noise in the same image." Specification, p. 2, lines 20-26. Indeed, the specification specifically states that "spike noise points in an image are inconsistent with their neighbors." *Id.* p. 9, lines 22-23. In other words, as described in the present specification, spike noise is local in nature. Therefore, interpreting the recited claims to include non-local noise is unreasonable and inconsistent with the specification. By ignoring the definition provided in the specification, the Examiner appears not to be practicing proper procedure. In view of the specification, Applicant submits that the reduction of non-local noise, as disclosed by Wilensky, fails to teach or suggest performing spike noise dependent blending as recited by independent claims 1, 21, and 24.

Second, Applicant reasserts that the Wilensky reference fails to teach or suggest blending "input image data with processed image data," as recited in claims 1, 21, and 24. Per the claim language, the processed image data is produced by "processing input image data." Thus, the claims recite the blending of data derived from the input image data with processed data produced from the input image data. In short, the data that is blended is derived from / produced from the same input image data. In contrast, as previously stated by Applicant, the Wilensky reference discloses blending data from two separate image

regions to form a blended image region. Wilensky, col. 5, line 65 to col. 6, line 1; col. 1, lines 7-9; Fig.2.

In response to these arguments, the Examiner stated the following:

> However, in response to applicant's argument, the examiner disagrees because as shown in Figure 1, Step 110, Wilensky et al. clearly teaches the blending of the first image (the data derived form the input image) with the second image (the processed image data) (column 4, line 35-37). . . . In response to the applicant's arguments that the Examiner has not pointed to any process thought by Wilensky that could reasonably be correlated to blending data based on the same image data, the examiner would like to point that Wilensky clearly mentioned an example of Clone Stamp tool in Photoshop software, provided by Adobe Systems Incorporated of San Jose, Calif., where blending a portion of an image with another portion of the same image (column 1, line 29-33).
>
> Office Action pp. 2-3 (emphasis added).

By these remarks, the Examiner appears to be admitting that the blending disclosed in the Wilensky reference blends different image data together. Specifically, step 110, shown in Figure 1 of the Wilensky reference, states, "blend first and second image components corresponding to first and second image regions respectively." Wilensky, Fig. 1. Thus, it appears that step 110 recognizes that the blended components originate from different image regions. Further, the passage of Wilensky cited by the Examiner recites, "blending a portion of an image with another portion of the same image." Office Action, p.3. Thus, the Examiner has recognized that the blending disclosed in the Wilensky reference refers to blending two different portions of an image together. Applicant would like to point out that different potions of an image are not based on the same underlying image data. Indeed, each image portion is based on its own

set of data. In other words, blending two separate regions (or portions) of an image together involves blending data based on two different sets of underlying data.

In summary, the Wilensky reference appears to teach blending data from two different regions, which necessarily includes blending different input image data. The Examiner still has not pointed to any process taught by Wilensky that could reasonably be correlated to blending data based on the same image data. Further, the Tannenbaum and Fritz references fail to obviate this deficiency. Therefore, absent some showing that the cited references teach the recited subject matter of claims 1, 21, and 24 (i.e., blending data derived from input image data with processed input image data produced from the input image data) no *prima facie* case of obviousness is believed to exist with regard to claims 1, 21, and 24.

Omitted Features: the Fritz reference

In the Office Action, the Examiner relied on the Fritz reference to disclose "characterizing spike noise," as recited in independent claims 1, 21, and 24. Office Action, pp. 12-13. Specifically, the Examiner implied that median filtering an image to reduce noise spikes could represent characterizing spike noise as recited in the present claims. *See id.* However, claims 1, 21, and 24, all recite, *inter alia,* "characterizing spike noise . . . and performing spike noise dependent blending . . . based upon the characterization." (Emphasis added.) Thus, Applicant respectfully asserts that the Fritz reference fails to teach or suggest "characterizing spike noise," as recited in claims 1, 21, and 24.

As made clear by the recitations of independent claims 1, 21, and 24, the characterization is used to perform "spike noise dependent blending." Therefore, the characterization necessarily includes a characterization that can be used in blending. The specification provides examples of such characterizations. In one embodiment, the characterization of spike noise is completed when processing circuitry determines

whether individual pixels of the image are likely to represent spike noise. *See* Application, p. 12, lines 25-26; Fig. 3, reference number 112. Then, either normal blending (e.g., 114) or noise likelihood blending (e.g., 116) is performed depending on how each pixel is characterized. *See* Fig. 5. Consequently, the characterization of the spike noise determines what type of blending is performed.

In contrast, the Fritz reference discloses filtering data to remove noise spikes. Fritz, para. 72. The portion of the Fritz reference cited by the Examiner states the following: "Filter the image before processing for a number of reasons. These include: 1) Low pass filter to reduce overall noise of the image, 2) median filter to reduce isolated noise spikes in the image." Fritz, para. 72 (emphasis added); *see* Office Action pp. 12-13. Thus, it appears that the Fritz reference merely discloses removing noise spikes before processing. Indeed, the removal of noise before processing, as disclosed in the Fritz reference, seems to indicate that the noise would not be used during subsequent processing. The Examiner has not pointed to any process taught by the Fritz reference that could reasonably be correlated to characterizing spike noise in a manner that could be used in blending. Further, the Tannenbaum and Wilensky references fail to obviate this deficiency. Therefore, absent some showing that the cited references teach the recited subject matter of claims 1, 21, and 24 (i.e. characterizing spike noise in a way that can be used in blending) no *prima facie* case of obviousness is believed to exist with regard to claims 1, 21, and 24.

Improper Combination: Fritz and Wilensky Teach Different Principles of Operation

In maintaining the present rejections, the Examiner acknowledged that the Fritz reference fails to disclose (1) processing input image data by identifying features of interest to produce processed image data; and 2) performing spike noise dependent blending of data derived from the input image data with the processed image data based upon the characterization. *Id.* The Examiner relied on the Wilensky and Tannenbaum references to remedy these deficiencies. Although Applicant believes that the Fritz,

Wilensky, and Tannenbaum references collectively fail to render the pending claims obvious for at least the reasons set forth above, Applicant further stresses that the Wilensky and Fritz references teach different principles of operation and, therefore, the references are not properly combinable. *See In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959); M.P.E.P. §2143.01(VI).

As the Examiner has recognized in the rejection of dependent claim 6, the Wilensky reference relies on a principle of operation that blends two image regions using two different formulas: one formula for the noise components and another formula for the non-noise components. Wilensky, col. 7, lines 30-50; *see* Office Action, pp. 14-15. Specifically, two source image regions are separated into four components: two noise components (one from each region), and two non-noise components (one from each region). Wilensky, col. 7, lines 31-34. The non-noise components are blended using one equation (equation 5), and the noise components are blending using another equation (equation 6). *Id.* at col. 7, lines 45-50. Then, the results of equations 5 and 6 are blended together to form a blended image region. *Id.* at col. 7, lines 44-45, equation 4. The Wilensky reference recognizes the importance of including noise in the blended image stating, "[t]he term noise includes high-frequency image data that actually corresponds to the abstract image being represented." Wilensky, col. 6, lines 57-58. Further, a stated advantage of the blending process disclosed in Wilensky is that "the resulting blended image region can more accurately represent noise characteristics of the two source image regions." *Id.* at col. 7, lines 1-2; *see also* col. 3, lines 28-30; Abstract, lines 1-3. Thus, the principle of operation taught by the Wilensky reference clearly requires that the noise components be used to form the blended region.

In contrast, the principle of operation set forth in the Fritz reference relies on removing noise spikes before processing. Fritz, col. 7, para. 72. Specifically, a median filter is used to "reduce isolated noise spikes in the image." *Id.* Thus, as one skilled in the art will readily appreciate, the noise components of the image in the Fritz reference

are removed, or reduced, before processing, and consequently, are not used in the processing.

With the foregoing in mind, Applicant reminds the Examiner that if the proposed modification or combination would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon,* 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); *see* M.P.E.P. §2143.01(V). Accordingly, even if the Wilensky reference was hypothetically modified to further include reducing or removing noise before processing, Applicant submits that the resulting blended image of Wilensky would not include the noise components and, therefore, would not be suitable or satisfactory for preserving noise in a blended image. Therefore, Applicant submits that, contrary to the Examiner's assertions, it would not be obvious to one skilled in the art to combine the teachings of the Wilensky reference with the noise removal techniques disclosed by the Fritz reference.

Response to Arguments

Applicant has reviewed the Response to Arguments section provided by the Examiner in the current Office Action, and would like to further address the following points not already addressed in the above section. The Examiner stated:

> In response to the Applicant's arguments that the Tannenbaum reference does not appear to contemplate the use of spike noise dependent blending, the examiner would like to point out the following precision:
>
> Fritz et al. disclose a method, apparatus (paragraph [0003], line 1-2) and computer program (paragraph 0037]), line 1-2) characterizing that spike noise in the input image data (paragraph [0072], line 3-4), (the characterizing the spike noise in the input image data is read as reducing a spike noise in an image). Fritz et al. do not explicitly mention the

> processing of the input image data by identifying features of interest to produce processed image data. Tannenbaum et al. teaches the processing the input image data by identifying features of interest to produce processed image data (column 5, line 41-44).
>
> All of the elements are known in references of Fritz et al. and Tannenbaum et al. The only difference is the combination of the processing of the input image with the spike noise characterization.
>
> Office Action, pp. 3-4 (emphasis added).

Applicant appreciates the Examiner's detailed Response to Arguments section, but would respectfully like to point out that, contrary to the Examiner's assertion, not all elements appear to be disclosed in the Fritz and Tannenbaum references. For example, the "spike noise dependent blending of data . . . derived from the processed image data" recited in the independent claims does not appear to be disclosed in either of these references. Indeed, the Examiner relied on the Wilensky reference for these elements. Office Action pp. 12-13. Applicant requests that the Examiner clarify this remark or cite to specific portions in the Fritz and Tannenbaum references disclosing the missing elements.

Independent Claims 8, 22, and 25

Applicant submits that the Fritz, Tannenbaum, Wilensky, Yu, Nishikawa, and Avinash references collectively fail to disclose each element of independent claims 8, 22, and 25. The independent claims all recite, *inter alia*, "performing spike noise dependent blending of input image data with the processed input image data."

Omitted Features

As discussed above in relation to independent claims 1, 21, and 24, none of the Fritz, Tannenbaum, or Wilensky references, taken alone or in hypothetical combination, teach or suggest the act of "performing spike noise dependent blending of input image

data with the processed input image data," as recited in claims 8, 22, and 25. Therefore, at least in view of this deficiency, no *prima facie* case of obviousness exists with regard to independent claims 8, 22, and 25, and their dependent claims.

Moreover, none of the other cited references remedy the deficiencies set forth above. Indeed, the Examiner merely cited the Yu reference for its alleged teaching of rank order filtering. *See* Office Action, para. 10(1); para. 14(1). The Examiner merely cited the Nishikawa reference for its alleged teaching related to computing an absolute difference. *See id.* at para. 11; para. 14(1). The Examiner merely cited the Avinash reference for its alleged teaching related to a multi-level mask. *See id.* at para. 12; para. 14(1). None of these references appears to contemplate the use of spike noise dependent blending.

In view of these deficiencies among others, the cited references, taken alone or in hypothetical combination, cannot render obvious the current independent claims 8, 22, and 25, and their dependent claims.

Invention not by "Another": the Avinash reference

Applicant respectfully submits that the rejection of independent claims 8, 22, and 25 is based in part on the Avinash reference. Applicant notes that the Avinash reference names as its inventors Gopal B. Avinash and Thomas Toth, and notes that Mr. Avinash is the sole inventor of the present application. Applicant submits an affidavit of Mr. Avinash under 37 C.F.R. § 1.132, along with the present response, declaring that any invention disclosed but not claimed in the Avinash reference was derived from the inventor of the present patent application and is, therefore, not an invention "by another."

Thus, Applicant respectfully submits that the Avinash reference fails to qualify as prior art under 35 U.S.C. § 102(a) or under 35 U.S.C. § 102(e) and is, therefore, not available to the Examiner as prior art. Accordingly, Applicant respectfully requests that

the Examiner remove the Avinash reference from consideration. After the Avinash reference is removed, the Examiner's rejections based on this reference are moot.

Independent Claims 11, 18, 23, and 26

Independent claims 11, 18, 23, and 26 recite, *inter alia*, "blend[ing] data derived from the input image data with the processed image data via weighting factors determined based upon the likelihood that the discrete picture elements exhibit spike noise." Applicant respectfully reiterates that the Tannenbaum, Hsieh, and Wilensky references collectively fail to disclose each element of independent claims 11, 18, 23, and 26.

Omitted Features: the Wilensky reference

In the Office Action, the Examiner relied on the Wilensky reference to disclose "blending data derived from the input image data with the processed input image data," as recited in claims 11, 18, 23, and 26. However, as discussed above in relation to independent claims 1, 21, and 24, neither the Tannenbaum reference nor the Wilensky reference, taken alone or in hypothetical combination, teach or suggest the act of "blending data derived from the input image data with the processed input image data," as recited in claims 11, 18, 23, and 26. Further, the Hsieh reference fails to obviate this deficiency. Indeed, the Examiner merely cited the Hsieh reference for its alleged teaching related to determining a likelihood that discrete picture elements exhibit spike noise. *See* Office Action, pp. 22-23, 25. Therefore, at least in view of this deficiency, no *prima facie* case of obviousness exists with regard to independent claims 11, 18, 23, and 26, and their dependents.

Omitted Features: the Hsieh reference

In the Office Action, the Examiner relied on the Hsieh reference to disclose "determin[ing] a likelihood that discrete picture elements in the input image data exhibit spike noise," as recited in independent claims 11, 18, 23, and 26. Office Action, pp. 22, 25. Specifically, the Examiner implied that using linear interpolation to reduce the

probability of erroneously considering spike noise could represent determining a likelihood of spike noise as recited in the present claims. *See id.* However, claims 11, 18, 23, and 26 all recite, *inter alia*, "determine[ing] a likelihood that discrete picture elements . . . exhibit spike noise; and blending data . . . via weighting factors determined based upon the likelihood . . . ." (Emphasis added.) Thus, Applicant respectfully asserts that the Hsieh reference fails to teach or suggest "determining a likelihood" of spike noise, as recited in claims 11, 18, 23, and 26.

As made clear by the recitations of independent claims 11, 18, 23, and 26, the "likelihood" is used to determine weighting factors. Therefore, the determination of the "likelihood" necessarily includes determining a likelihood of spike noise that can be used to determine weighting factors. The specification provides examples of such determinations. In one embodiment, the determination is completed when processing circuitry determines whether individual pixels of the image are likely to represent spike noise. *See* Application, p. 12, lines 25-26; Fig. 3, reference number 112. The determination may employ a multi-level mask to categorize pixels into various levels of the mask based on a percentage of a set intensity value. Application, p. 12, lines 17-23. Then, for each level of the mask, a different weighting factor may be used for blending. Application, p. 12, lines 21-23. Thus, the likelihood determination made for each pixel determines the weighting factor that is used for blending.

In contrast, the Hsieh reference discloses using linear interpolation to determine the boundary of a high density object. *See* Hsieh, col. 2, lines 3-6; 14-15. Boundaries of neighboring rows for a boundary candidate are located by "ensuring that the number of pixels that belong to the high density object exceeds a certain predefined threshold." *Id.* at col. 2, lines 17-20. The neighboring boundaries are compared to the boundary candidate and then the boundaries may be shifted or smoothed based on the comparison. *See* Hsieh, col. 2, lines 24-40. The boundaries may identify high-density objects, such as teeth. *See id.*

The portion of the Hsieh reference cited by the Examiner states the following: "Particularly, linear interpolation is utilized to determine the boundary, and to reduce the probability that spike noise will be erroneously considered as high density objects, the N by N neighbors of the boundary candidate are searched . . . ." Hsieh, col. 2, lines 14-18; *see* Office Action, pp. 22 and 25. Indeed, the passage cited by the Examiner, appears merely to disclose that the technique reduces the probability that spike noise will be erroneously considered. The Examiner has not pointed to any process taught by the Hsieh reference that could reasonably be correlated to determining the likelihood of spike noise, much less a likelihood that could be used to determine weighting factors for blending. Further, the Tannenbaum and Wilensky references fail to obviate this deficiency. Therefore, absent some showing that the cited references teach the recited subject matter of claims 11, 18, 23, and 26 (i.e. determining a likelihood of spike noise that can be used to determine weighting factors for blending) no *prima facie* case of obviousness is believed to exist with regard to claims 11, 18, 23, and 26.

Response to Arguments

Applicant has reviewed the Response to Arguments section provided by the Examiner in the current Office Action, and would like to further address the following points not already addressed in the above section. The Examiner stated:

> In response to applicant's argument that the cited references, taken alone or in hypothetical combination, fail to teach or suggest "blending data …. Via weighting factors determined based upon that likelihood that the discrete picture elements exhibit spike noise", the Examiner would like to point out the following precision regarding the combination Tannenbaum et al. and Hsieh references: Tannenbaum et al. disclose a method (column 8, line 66), system (column 1, line 9-10), and program (column 5, line 27-29) for processing of the input image data by identifying

> features of interest to produce processed image data (column 5, line 41-44).
> Tannenbaum et al. do not explicitly mention the determining of likelihood that discrete picture elements in the input image data exhibit spike noise.
> Hsieh teaches the probability that the spike noise will be erroneously considered as high-density objects is determined within the boundary (column 2, line 15-17), (the likelihood is read as probability, and the discrete picture is read as CT imaging).
> All the elements are known in Tannenbaum et al. and Hsieh references. The only difference is the combination of the processing in input image data with determining of likelihood that discrete picture elements exhibit spike noise.
>
> Office Action, pp. 8-9 (emphasis added).

Applicant appreciates the Examiner's detailed Response to Arguments section, but would respectfully like to point out that contrary to the Examiner's assertion, not all elements appear to be disclosed in the Hsieh and Tannenbaum references. For example, the act of "blend[ing] data derived from the input image data with the processed image data via weighting factors," recited in the independent claims does not appear to be disclosed in either of these references. Indeed, the Examiner relied on the Wilensky reference for these elements. Office Action pp. 23, 26. Applicant requests that the Examiner clarify this remark or cite to specific portions in the Hsieh and Tannenbaum references disclosing the missing elements.

The Examiner also stated:

> In response to the applicant's arguments that the Wilensky reference appears to disclose the use of blending parameters based on whether non-local noise exists…, this is in contrast to the use weighting factor based upon the likelihood of spike noise, which is local in nature; the Examiner would like to point out that the claim language is given its broadest reasonable interpretation. The

> specification in not measure of invention. Therefore, limitations contains therein can not be read into the claims for purpose of avoiding the prior art. In re Sporck, 55CCPA 743, 386 F. 2d 924, 155 USPQ 687 (1968). For instant case, that spike noise being different from non-local noise was not claim. Thus any method of blending parameters whether it's not local noise or local spike noise could be read that broad claim.
>
> Office Action p. 11

However, the term "spike noise" is a limitation explicitly recited in claims 11, 18, 23, and 26. As discussed above in relation to independent claims 1, 21, and 24, the words of a claim must be given their plain meaning unless it is inconsistent with the specification. The term "spike" connotes a property that is local in nature which conflicts with interpreting spike noise as patterned noise, as asserted by the Examiner. Further, as discussed above in relation to independent claims 1, 21, and 24, interpretation of claims must be *reasonable and consistent* with the specification. The specification clearly differentiates spike noise from non-local noise. Accordingly, interpreting the term "spike noise" to include only non-local noise is inconsistent with the specification and unreasonable.

Dependent Claims 4, 7, 9, 10, 14, and 17

Applicant respectfully submits that the rejections of dependent claims 4, 7, 9, 10, 14 and 17 are based in part on the Avinash reference. As noted above, Applicant submits an affidavit of Mr. Avinash under 37 C.F.R. § 1.132, along with the present response, declaring that any invention disclosed but not claimed in the Avinash reference was derived from the inventor of the present patent application and is, therefore, not an invention "by another."

Thus, Applicant respectfully submits that the Avinash reference fails to qualify as prior art under 35 U.S.C. § 102(a) or under 35 U.S.C. § 102(e) and is, therefore, not available to the Examiner as prior art. Accordingly, Applicant respectfully requests that the Examiner remove the Avinash reference from consideration. After the Avinash reference is removed, the Examiner's rejections based on this reference are moot.

Authorization for Extensions of Time and Payment of Fees

In accordance with 37 C.F.R. §1.136, Applicants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request thereof. The Commissioner is authorized to charge the requisite extension fee, and any other fees determined to be presently due, to Deposit Account No. 07-0845; Order No. 135059XZ(GEMS:0240).

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: June 24, 2008

/John Rariden/

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